

The at least one load control may comprise a variable circuit breaker that adjusts dynamically to the transmitted load capability or an outlet adapter that closes an outlet to an appliance plug when load capability from the electric source is below a predetermined level.

Load capability may be determined based on a transmitted reference output signal intended to reduce power consumption during peak load or reduced power conditions

Brief Description of Drawings

The foregoing and other objects, features and advantages of the invention will be apparent from the more particular description of preferred embodiments of the invention, as illustrated in the accompanying drawings in which like reference characters refer to the same parts throughout the different views. The drawings are not necessarily to scale, emphasis instead being placed upon illustrating the principles of the invention.

Figure 1 is a schematic view of a typical installation of the present invention.

Figure 1a is a schematic view of a typical installation of the present invention with two power lines from the generator to the transfer box on the home, and a generator monitor on each power line.

Figure 2 is a block diagram of a generator monitor installed between the generator power cable and either the generator or the home's electric box, in accordance with the present invention.

Figure 3 is a flow diagram of the generator monitor's process, in accordance with the present invention.

Figure 4 is a block diagram of an interrupt switch with settings for its priority and the available power level it should monitor, in accordance with the present invention.

Figure 5a is a flow diagram for the set up and first decision process executed by the interrupt switch where the switch determines whether the returning power is from the electric utility or from the backup generator, in accordance with the present invention.

Figure 5b is a continuation of the flow diagram of 5a showing the interrupt switch process for the case where the returning power is from the backup generator, in accordance with the present invention.

Figures 6a, 6b and 6c are views of user displays having varying levels of functionality and user-reporting capability, in accordance with the present invention.

Figure 7a is a flow diagram of the decision processes used to control user displays, in accordance with the present invention.

Figure 7b is an enhanced alternative embodiment of one of the decision blocks of Figure 7a, in accordance with the present invention.

Detailed Description of Preferred Embodiments of the Invention

Figure 1 presents a typical installation of the various components of the present invention. A generator monitor 10 is connected to a home's electric box where a generator's cable is plugged into the house. The Generator monitor 10 measures the current load, calculates available power and transmits data related to this power determination via transmission 17 to other devices distributed throughout the home. On the upper floor, an interrupt switch 20a is supporting a refrigerator 13, and in the basement, interrupt switches 20b, 20c, and 20d are supporting a blower motor for a furnace 14, a sump pump 15 and a water pump 16, respectively. The interrupt switches

20a, 20b, 20c and 20d, monitor transmissions 17 from the generator monitor 10 and either enable or disable their respective appliances based on their own internal decision making process. Interrupt switches 20a, 20b, 20c and 20d transmit their enabled or disabled status to other devices distributed throughout the home. Disabled status is being transmitted via 18a and 18b from interrupt switches 20a and 20d respectively. A user display 30 on the upper floor informs the user as to whether or not a microwave 12 can be operated on the existing available power at any given time. The user display 30 reports the “disabled” or “enabled” status of all the interrupt switches in the system based on transmissions monitored such as 18a and 18b from interrupt switches 20a and 20b respectively.

Generator Monitor

The generator monitor 10 reports the momentary available power, or latent capacity, of the generator or limited power source, to the other devices in the system. These power levels are referred to herein as Generator Available Power levels or GAP levels. The term GAP could also be thought of as the gap between the maximum capability of the generator and the momentary load on the generator. The GAP is the latent capacity of the generator that could be used to power additional appliances. In some instances, the GAP is the latent capacity relative to a reference capacity that is lower than the full rated capacity of the generator. In these circumstances the lower reference capacity is chosen for the purpose of enhancing the level of control the user has over the use of the generators capacity. The use and benefit of these GAP levels, calculated from lower reference capacities (referred to as “reference outputs”) will be explained in detail below.

It is well known that many appliances apply surge loads when first starting. The most common of these appliances are those with electric motors, which typically require two, three or even four times the power to start than is required to run continuously. To provide for this need, most generators are designed with surge and continuous load capabilities. The generators surge capability can last for just a few seconds in order to provide the power required by appliances with surge start up loads. The continuous load